at least one sensor that is rotatable *about* a second axis different from the first axis. By contrast, the support extensions in Das rotate only *partially about* their respective axes. Specifically, the **z0** axis permits "left and right panning arm **2** action" (Das, Col. 3, Ln. 61-62), the **z1** axis permits "tilting the arm **2** up-and-down" (Das, Col. 3, Ln. 63), and the optional **z2** axis provides any rolling that is needed to better track "undulating terrain" (Das, Col. 3, Ln. 65-66). Thus, the three axes in Das provide panning, tilting, and rolling. Figures 3a and 3b in Das illustrate, for example, the limited rotation *partially* about the panning **z0** axis.

The distinction of rotation about an axis versus rotation *partially* about an axis is important. Das is unsuitable for high speed scanning due to the left and right panning and up and down tilting movement of its extension arms. Indeed, as the Applicant discusses in the application:

> "This **back and forth** linear motion requires that the antenna slow down, stop, and then speed up each time it reaches the edge of the scanning area. This type of **back and forth** movement creates tremendous mechanical stresses in the antennas and survey system when the system is operated at a high survey speed." (Page 2, Ln. 10-14) (emphasis added)

The rotation in the Applicant's system is specifically described as "360° of rotational movement." (Specification, Page 7, Ln. 19). By contrast, the operation of the Das device is explained as follows:

> "In operation, the mine detector is moved cyclically in a **left and right, back and forth** panning or sweeping action across a scanned region R. Thus, one lateral side of the mine detector 3 alternates between being a leading and trailing edge." (Col. 5, Ln. 51-53) (emphasis added)

The left and right, back and forth motion in Das, which makes it unsuitable for high speed scanning, is precisely the type of motion that the Applicant's system seeks to avoid. A

sensor that rotates *about* an axis does not exhibit left and right or back and forth movement. For the left and right or back and forth movement of Das to occur, the sensor must rotate only *partially* about its axis of rotation. Indeed, Das *teaches away* from rotation about the axis by specifically describing an alleged benefit of *partial* rotation and the "back and forth" movement that it produces – one lateral side of the sensor in the Das device alternates between being a leading and a trailing edge. The *panning* motion of the sensors is also described in Das as having an economical benefit. (Col. 6, Ln. 11-23).

Lemelson (U.S. Patent No. 4,636,137) and Stone (U.S. Patent No. 5,443,354) similarly fail to disclose the claimed inventions. Specifically, each claim in the present application recites a sensor and an extension arm with *different* axes of rotation. Referring to Figure 1 of Stone, camera 72 and camera 76 are mounted directly to their support extensions, and thus share a common axis of rotation with their support extensions. Indeed, camera 76 is "forced to rotate with the torso joint 20" to make it safe from a collision with gripper 36. (Stone, Col. 5, Ln. 53-54) Thus, Stone actually teaches away from separate rotational axes. Referring to Figure 3 of Lemelson, camera 30 and camera 34 are similarly shown as mounted directly to their support extensions, and thus sharing a common axis of rotation with their support extensions. (Lemelson, Col. 6, Ln. 65 – Col. 7, Ln. 5) In addition to the common axis of rotation with extension arm 11S, camera 30 also has a pivot axis on bracket mount 31. However, as shown in Figure 3, camera 30 can rotate only *partially* about its horizontal pivot axis.

As discussed above, Das does not disclose, teach, or otherwise suggest a multiple-axis sensor apparatus in which the sensor rotates *about* its axis of rotation, as required for high-speed operation. A claim is anticipated only if each and every element as set forth in the claim is found either expressly or is inherently described in a single prior art reference.

Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Accordingly, Applicant respectfully requests the Examiner to withdraw the §102(e) rejections of Claims 1-6, 10, 12, 14, 15, and 17-20 under Das.

Further, because Das does not disclose, teach, or suggest rotation about an axis, but instead discloses rotation only partially about an axis, Applicant respectfully submits that Claims 7, 9, 11, 13, and 16 cannot be obvious in view of Das. "In appropriate circumstances, a single prior art reference can render a claim obvious. ... However, there must be a showing of a suggestion or motivation to modify the teachings of that reference to the claimed invention in order to support the obviousness conclusion." *Sibia Neurosciences, Inc. v. Cadus Pharmaceutical Corp.*, 225 F.3d 1349, 1356, 55 U.S.P.Q.2d 1927, 1931 (Fed. Cir. 2000). There has been no such showing the present case. Indeed, as discussed above, Das *teaches away* from rotation of the sensors *about* an axis. Accordingly, Applicant respectfully requests the Examiner to withdraw the §103 rejections of Claims 7, 9, 11, 13, and 16 under Das.

In view of the above, each of the claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

Applicants do not believe that there is a fee required to file this paper. If Applicant is in error, please charge the fee to deposit account number 06-2375/10022291 from which the undersigned is authorized to draw. The Commissioner is hereby authorized to charge any required fee and/or credits by this paper and during the entire pendency of this application.

Dated: May 9, 2003

Respectfully submitted,

By _____

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